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(54) Title: **HSAN II RELATED GENE AND EXPRESSION PRODUCTS AND USES THEREOF**

(57) Abstract: Methods of utilizing a gene related to pain perception, herein dubbed HSN2, or its encoded protein, dubbed herein "sensorin," for the screening and identification of agents for the treatment of pain, neuropathy and related disorders, especially small organic compounds, as well as methods of using these compounds to treat or otherwise ameliorate pain, neuropathy and related disorders in human patients. Novel polypeptides and polynucleotides, along with their nucleotide and amino acid sequences, are also disclosed.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 03/01716

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K14/47 C12Q1/68 G01N33/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, SEQUENCE SEARCH, WPI Data, PAJ, BIOSIS, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE GENBANK [Online] 1 May 1999 (1999-05-01) MUZNY, D. ET AL.: "Homo sapiens 12p13.3 BAC RPC111-388A16 (Roswell Park Cancer" Database accession no. AC004765 XP002274931 Nucleotides 131705-137266 (relevant for Seq Id no 6), Nucleotides 136417-139202, (relevant for Seq Ids 1, 7, 9), Nucleotides 130245-143790 (relevant for Seq Id 12) abstract</p> <p style="text-align: center;">--- -/-</p>	41-47

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

6 April 2004

Date of mailing of the international search report

26. 04. 2004

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01716

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/57187 A (BOYLE BRYAN J ; FORD JOHN E (US); HYSEQ INC (US); ZHOU PING (US); A) 9 August 2001 (2001-08-09) Nucleic acid Seq Id 10, polypeptide Seq Id 104.	48-51
A	claims 17,18 ---	1-40
A	WO 00/62798 A (ST ELIZABETH S MEDICAL CT INC) 26 October 2000 (2000-10-26) ---	
A	NICHOLSON GARTH A ET AL: "The gene for hereditary sensory neuropathy type I (HSN-I) maps to chromosome 9q22.1-822.3" NATURE GENETICS, vol. 13, no. 1, 1996, pages 101-104, XP008029150 ISSN: 1061-4036 ---	
P,A	SAMUELS M ET AL: "Mutations in a novel gene cause hereditary sensory and autonomic neuropathy type II." AMERICAN JOURNAL OF HUMAN GENETICS, vol. 73, no. 5, 8 November 2003 (2003-11-08), page 192 XP001161144 53rd Annual Meeting of the American Society of Human Genetics; Los Angeles, CA, USA; November 04-08, 2003 ISSN: 0002-9297 -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 03/01716

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☒ Claims Nos.: 29-34 (all partially)
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claims 29-34 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Although claim 35 is directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box I.2

Claims Nos.: 29-34 (all partially)

Present claims 29-34 relate to a compound defined by reference to a desirable characteristic or property, namely HSN2 modulation. The claims cover all compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such compounds. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the compounds by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to an antisense nucleic acid, a ribozyme or an antibody targetting the HSN2 gene or its encoded gene product.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 03/01716

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